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Fuel cell stack; Mathematical model; Engineering design; Fuel cell productivity; Proton exchange membrane fuel cell (PEMFC) (Ghadamian, H. (163) 87)

Experimental measurement

PEM fuel cell; Cross flow; Permeability; Serpentine flow channel; Numerical simulation (Park, J. (163) 852)

Fabrication

SOFC; Micro tubular; Modeling; Microstructure (Funahashi, Y. (163) 730) Fade

Thionyl chloride; Battery; Lithium corrosion; Safety (Spotnitz, R.M. (163) 578)

Fe₂P

LiFePO₄; Olivine-type iron phosphate; Mechanical alloying (Kim, C.W. (163) 144)

FESEM

Lithium-ion battery; Self-propagating solid-state metathesis; Submicronsized; LiNi $_{1/3}$ Co $_{1/3}$ Mn $_{1/3}$ O $_2$ (He, Y.-S. (163) 1052)

Fibre electrode

Polyaniline; Carbon nanotubes; Wet-spinning; All-polymer battery; Ionic liquid (Wang, C.Y. (163) 1104)

Fibres

Zinc; Anode; Batteries; Fuel cells (Zhang, X.G. (163) 591)

Fibrous membrane electrolyte

Lithium ion polymer battery; Electrospinning; poly(vinylidene fluoride) (Lee, S.W. (163) 41)

Finite element method

Lithium-polymer battery; Model; Electrode configuration; Potential distribution; Current density distribution (Kwon, K.H. (163) 151)

First principle model

Solid oxide; Fuel cell; SOFC; ODE; BOP (Murshed, A.M. (163) 829)

First-principle calculation

Molecular dynamics; Hydrogen adsorption; Carbon nanotube (CNT); Aluminum; Quantum energy density (Nakano, H. (163) 125)

Flat-pack

Breathing process; Catalyst layer; MEA; DMFCs (Yu, K.-C. (163) 34)

Flat-pack

Hydrogels; Fuel diffusion rate; Methanol crossover; DMFCs (Kim, W.-J. (163) 98)

Flow channel design

PEM fuel cells; Water flooding; Neutron imaging technique (Li, X. (163) 932)

Flow rate

PEM fuel cell; Humidification; Relative humidity; Fuel cell performance (Guvelioglu, G.H. (163) 881)

Formic acid

Electrocatalyst; Fuel cell; PtAu; Anode; Methanol (Choi, J.-H. (163) 71)

Relative permeability; Gas diffusion layer (GDL); PEMFC; Fuel cell (He, G. (163) 845)

Free-breathing segmented cathode

DMFC; Current distribution; PVDF-g-PSSA; Methanol crossover (Saarinen, V. (163) 767)

Freezing point

PEM; Fuel cell; Ice; Super-cool (Ishikawa, Y. (163) 707)

FTIR

Lithium battery; Glass electrolyte; Electrical conductivity; Impedance (Cho, K.I. (163) 223)

Fuel cell

Carbon black; Clay; Catalyst; Dispersion (Pai, Y.-H. (163) 398)

Fuel cell

Conducting polymer; Graphite composites; Bipolar plates; Polyether sulfone; Polyphenylene sulfide; Hybrid materials (Radhakrishnan, S. (163) 701)

Fuel cell

Dimethyl ether (DME); Direct methanol fuel cell (DMFC); Anode catalyst (Yoo, J.-H. (163) 103)

Fuel cell

DMFC; Fuel cell model (Ge, J. (163) 906)

Fuel cell

Electrocatalyst; PtAu; Anode; Formic acid; Methanol (Choi, J.-H. (163) 71) Fuel cell

Fractal model; Relative permeability; Gas diffusion layer (GDL); PEMFC (He, G. (163) 845)

Fuel cell

Catalysts; Pt/carbon; Precipitation; Carbon black; Cathode (Kim, M. (163) 93) Fuel cell

Hydrogen; Autothermal reforming; Diesel; Gasoline; Liquid hydrocarbons (Kang, I. (163) 538)

Fuel cell

PEMFCs; Two-fluid model; Two-phase flow; GDL/channel interface; Liquid water removal (He, G. (163) 863)

Fuel cell

Polymer-electrolyte; Transient model; Sweep simulations; Liquid water; Performance (Shah, A.A. (163) 792)

Fuel cell

Self-humidifying membrane; Composite membrane; Pt/CNTs (Liu, Y.-H. (163) 806)

Fuel cell

PEM; Freezing point; Ice; Super-cool (Ishikawa, Y. (163) 707)

Fuel cell

Proton conduction; Polymer electrolyte membrane; Polyparabanic acid (Aihara, Y. (163) 60)

Fuel cell

Solid oxide; SOFC; ODE; First principle model; BOP (Murshed, A.M. (163) 829)

Fuel cell

Syngas; Coal; Solid oxide; Trace specie (Trembly, J.P. (163) 985)

Fuel cell drive cycle

PEM fuel cell durability; Platinum electrocatalyst; Electrochemically active surface area; Catalyst aging; Electrochemical potential cycling (Borup, R.L. (163) 76)

Fuel cell hybrid bus

PEMFC; Energy management strategy; Fuel economy; Performance degradation (Ouyang, M. (163) 467)

Fuel cell model

DMFC; Fuel cell (Ge, J. (163) 906)

Fuel cell performance

PEM fuel cell; Flow rate; Humidification; Relative humidity (Guvelioglu, G.H. (163) 881)

Fuel cell productivity

Fuel cell stack; Mathematical model; Engineering design; Proton exchange membrane fuel cell (PEMFC); Exergy analysis (Ghadamian, H. (163) 87)

Fuel cell stack

Mathematical model; Engineering design; Fuel cell productivity; Proton exchange membrane fuel cell (PEMFC); Exergy analysis (Ghadamian, H. (163) 87)

Fuel cell vehicles

Fuel cells; Dynamic response (Williams, K.A. (163) 970)

Fuel cells

Carbon nanotubes; Catalyst; Oxygen electrodes; Manganese dioxide (Danilov, M.O. (163) 376)

Fuel cells

Ethanol oxidation; Pd/MWCNT; Electrocatalyst; Anode (Zheng, H.T. (163) 371)

Fuel cells

Contact resistance; Diffusion layer; Clamping force (Zhou, P. (163) 873)

Fuel cells

Dynamic response; Fuel cell vehicles (Williams, K.A. (163) 970)

Fuel cells

Membrane; Poly(vinyl alcohol); Polymer blend; Methanol crossover (DeLuca, N.W. (163) 386)

Fuel cells

Polymer electrolyte; Oxygen reduction; Electrocatalyst; Pt; TiO₂ (Gustavsson, M. (163) 670)

Fuel cells

Zinc; Fibres; Anode; Batteries (Zhang, X.G. (163) 591)

Fuel diffusion rate

Hydrogels; Methanol crossover; Flat-pack; DMFCs (Kim, W.-J. (163) 98) Fuel economy

Fuel cell hybrid bus; PEMFC; Energy management strategy; Performance degradation (Ouyang, M. (163) 467)

Fuel processing

Hydrogen; Partial oxidation; Syngas; Metal oxide; Millisecond reactor (Nguyen, B.N.T. (163) 623)

Fuel processor

Natural gas; Steam reforming; Residential cogeneration; Polymer electrolyte membrane fuel cell (Seo, Y.T. (163) 119)

Gadolinia-doped ceria

Methane decomposition; Carbon monoxide; Carbon dioxide; Nickel; Iron (Huang, T.-J. (163) 309)

Galvanostatic

Bipolar plates; Polypyrrole; Cyclic voltammometric; Corrosion (Wang, Y. (163) 500)

Galvanostatic pulse electrodeposition

Proton exchange membrane (PEM) fuel cells; Nafion-bonded carbon layer; Low Pt loading; Catalyst utilization efficiency (Lee, J. (163) 349)

Gas diffusion layer

PEM fuel cell; Liquid water transport; Compression; Visualization (Bazylak, A. (163) 783)

Gas diffusion layer

PEM fuel cells; Membrane-electrode assembly (MEA); Catalyst layer (Hwang, J.J. (163) 450)

Gas diffusion layer

PEMFC; Micro-layer; Carbon nano-fiber; Carbon nano-tube (Park, G.-G. (163) 113)

Gas diffusion layer

Proton exchange membrane fuel cell; Microporous layer; Carbon loading; Water management (Park, S. (163) 357)

Gas diffusion layer (GDL)

Fractal model; Relative permeability; PEMFC; Fuel cell (He, G. (163) 845) Gas diffusion media

PEM fuel cell; CFD modeling; Micro porous layer; Macro porous layer (Shimpalee, S. (163) 480)

Gas turbine

Solid oxide fuel cell; Pressurized hybrid system; Ambient pressure hybrid system (Park, S.K. (163) 490) Gasoline

Fuel cell; Hydrogen; Autothermal reforming; Diesel; Liquid hydrocarbons (Kang, I. (163) 538)

GDL/channel interface

Fuel cell; PEMFCs; Two-fluid model; Two-phase flow; Liquid water removal (He, G. (163) 863)

Gelcasting

Solid oxide fuel cells; Screen printing; Segmented-in-series; Redox cycling; Multi-cell stack (Pillai, M.R. (163) 959)

Glass electrolyte

Lithium battery; Electrical conductivity; Impedance; FTIR (Cho, K.I. (163) 223)

Graphite

Isocyanate; Electrolyte additive; Solid electrolyte interface; Li-ion battery (Zhang, S.S. (163) 567)

Graphite

Lithium oxalyldifluoroborate; Lithium bis(oxalato)borate; Electrochemical impedance spectroscopy; Solid electrolyte interface (Zhang, S.S. (163) 712)

Graphite composites

Conducting polymer; Bipolar plates; Polyether sulfone; Polyphenylene sulfide; Hybrid materials; Fuel cell (Radhakrishnan, S. (163) 701)

Half-cell test

Proton exchange membrane fuel cells; Platinum-cobalt alloy; Chemical vapor deposition; Oxygen reduction reaction (Seo, S.J. (163) 403)

HfCl,

NaAlH₄; TiO₂; VCl₃; Hydrogen desorption/absorption (Suttisawat, Y. (163) 996)

High temperature

Open circuit voltage (OCV); PEM fuel cells; Apparent exchange current density; Hydrogen crossover; AC impedance (Zhang, J. (163) 532)

High-temperature performance

Lithium-ion batteries; Positive electrodes; Olivine structure; Magnetic properties (Zaghib, K. (163) 560)

Homogeneous electrolyte zone

Dual-layer; Polymer electrolyte; Compatible layer; Li⁺ deposition; Cycle life (Lee, Y.-G. (163) 264)

Humidification

PEM fuel cell; Flow rate; Relative humidity; Fuel cell performance (Guvelioglu, G.H. (163) 881)

Hybrid

Solid electrolyte; Lithium ion; Sulfide glass; Conductivity (Hayashi, A. (163) 289)

Hybrid materials

Conducting polymer; Graphite composites; Bipolar plates; Polyether sulfone; Polyphenylene sulfide; Fuel cell (Radhakrishnan, S. (163) 701)

Hybrid membrane

Salt of heteropolyacid; Zirconium phosphate; Methanol crossover; Proton conductivity (Helen, M. (163) 433)

Hybrid system

Solid oxide fuel cell; Dynamic model (Zhang, X. (163) 523)

Hybrid vehicle

Intermediate temperature solid oxide fuel cell; ZEBRA battery; System model (Brett, D.J.L. (163) 514)

Hydrogels

Fuel diffusion rate; Methanol crossover; Flat-pack; DMFCs (Kim, W.-J. (163) 98)

Hydrogen

Fuel cell; Autothermal reforming; Diesel; Gasoline; Liquid hydrocarbons (Kang, I. (163) 538)

Hydrogen

Natural gas; Sub-quality natural gas; Thermodynamic analysis hydrogen sulfide; Sulfur dioxide; Carbon disulfide and methane (Huang, C. (163) 645)

Hydrogen

Partial oxidation; Syngas; Metal oxide; Fuel processing; Millisecond reactor (Nguyen, B.N.T. (163) 623)

Hydrogen

Sub-quality natural gas; SMR; Autothermal process; Hydrogen sulfide; Carbonyl sulfide (Huang, C. (163) 637)

Hydrogen adsorption

First-principle calculation; Molecular dynamics; Carbon nanotube (CNT); Aluminum; Quantum energy density (Nakano, H. (163) 125)

Hydrogen crossover

Open circuit voltage (OCV); High temperature; PEM fuel cells; Apparent exchange current density; AC impedance (Zhang, J. (163) 532)

Hydrogen desorption/absorption

NaAlH₄; TiO₂; VCl₂; HfCl₄ (Suttisawat, Y. (163) 996)

Hydrogen evolution

Direct borohydride fuel cell; Anode modification; Nafion addition; Cell performance (Li, Z.P. (163) 555)

Hydrogen fuel cell

Bipolar plate; Review (Tawfik, H. (163) 754)

Hydrogen generation

Cobalt; Nickel; Copper; Catalyst; Ammonia-borane (Xu, Q. (163) 364) Hydrogen oxidation reaction

Pt electrodes; Activation polarization; Exchange current density (Mann, R.F. (163) 678)

Hydrogen production

Dimethyl ether; DME; Corona discharge; Cold plasma (Zou, J.-J. (163) 653)

Hydrogen production

Microreactor; Non-noble catalysts; Silica; Methanol; Steam reforming (Shetty, K. (163) 630)

Hydrogen sulfide

Hydrogen; Sub-quality natural gas; SMR; Autothermal process; Carbonyl sulfide (Huang, C. (163) 637)

Hydrous ruthenium oxide

Anodic deposition; Acetate ion; EIS analysis; Supercapacitors (Hu, C.-C. (163) 1125)

Ice

PEM; Fuel cell; Freezing point; Super-cool (Ishikawa, Y. (163) 707) ICR

Plasma nitriding; Austenitic stainless steel; Bipolar plate; Passive film (Tian, R.J. (163) 718)

Imidazole

Proton; Membrane; Organic/inorganic hybrid; Phase separation; Sol-gel (Lee, S.-Y. (163) 27)

Impedance

Lithium battery; Glass electrolyte; Electrical conductivity; FTIR (Cho, K.I. (163) 223)

In situ X-ray diffraction

 $\rm ZrO_2\text{-}coated\ LiCoO_2;\ Phase\ transitions;\ Lithium\ batteries\ (Chung,\ K.Y.\ (163)\ 185)$

Infrared spectroscopy

Carbon aerogel; Activation; Surface treatment; Electrochemical properties (Fang, B. (163) 616)

Innovative bipolar plate

Micro PEM fuel cell stack; Microfabrication; Stack performance (Hsieh, S.-S. (163) 440)

Integrated composite membrane electrode assembly

Porous titanium sheet; DMFC; Planar stack (Wan, N. (163) 724)

Intermediate temperature solid oxide fuel cell

ZEBRA battery; Hybrid vehicle; System model (Brett, D.J.L. (163) 514) Internal reforming

Ethanol; Methanol; Methane; SOFC (Laosiripojana, N. (163) 942)

Ionic conductivity

Comblike polymer; Polymer electrolyte; Poly(ethylene oxide); Electrochemical stability, Mechanical strength (Itoh, T. (163) 252)

Ionic conductivity

Lithium polymer battery; Polymer blend; Poly(oligo[oxyethylene] oxyterephthaloyl); Solid polymer electrolyte (Oh, J.-S. (163) 229)

LLT; LiPON; Electrochemical stability (Lee, J.m. (163) 173)

Ionic liquid

Fibre electrode; Polyaniline; Carbon nanotubes; Wet-spinning; All-polymer battery (Wang, C.Y. (163) 1104)

Iron

Methane decomposition; Carbon monoxide; Carbon dioxide; Gadolinia-doped ceria; Nickel (Huang, T.-J. (163) 309)

Isocyanate

Electrolyte additive; Graphite; Solid electrolyte interface; Li-ion battery (Zhang, S.S. (163) 567)

Layer-by-layer deposition

Proton conducting membrane; Pore-filling (Son, H.D. (163) 66)

Li batteries

Capacity; Co-sputtering; Cu–Si; Nanocomposite; Cycling performance (Ahn, H.-J. (163) 211)

Li/FeS,

Pyrite; Cathode materials; TEGDME; Lithium batteries (Choi, J.-W. (163) 158)

Li/S cell

Low temperature; Liquid electrolyte; TEGDME; DOXL; MA (Ryu, H.-S. (163) 201)

Li+ deposition

Dual-layer; Polymer electrolyte; Compatible layer; Cycle life; Homogeneous electrolyte zone (Lee, Y.-G. (163) 264)

Li₂MnO

Lithium batteries; Nickel-manganese; Redox reactions; Electrode (Kim, S.H. (163) 294)

LiBoB

Differential scanning calorimetry (DSC); LiNi_{1/3}Co_{1/3}Mn_{1/3}O₂ with excess Li; Solid electrolyte interface (SEI) (Lu, W. (163) 1073)

LiCoO,

Etoile-Rebatt technology; Lithium rechargeable battery; Recycle (Ra, D.-i. (163) 284)

LiCoO₂

Eutectic self-mixing method; Lithium rechargeable battery; Cathode (Lee, S.-W. (163) 274)

 $LiFePO_4$

Olivine-type iron phosphate; Mechanical alloying (Kim, C.W. (163) 144) FePO.

Lithium-ion battery; Cathode; Surfactant; Sol–gel approach (Choi, D. (163) 1063)

LiFePO₄

Water-soluble binder; Li-ion; 60 °C (Guerfi, A. (163) 1046)

Li-ion

Water-soluble binder; LiFePO₄; 60 °C (Guerfi, A. (163) 1046)

Li-ion batteries

Cathode; Carbon; Orthophosphates; Electronic conductivity (Wolfenstine, J. (163) 1069)

Li-ion battery

Isocyanate; Electrolyte additive; Graphite; Solid electrolyte interface (Zhang, S.S. (163) 567)

Li-ion battery

Polymeric gel electrolyte; Nonflammability; Additive (Yoshimoto, N. (163) 238) Li $\mathrm{Mn}_{2}\mathrm{O}_{4}$

Eutectic self-mixing method; Lithium rechargeable battery; Cathode (Kang, H.-K. (163) 166)

LiMn₂O

Eutectic self-mixing method; Lithium rechargeable battery; Cathode (Na, J.-W. (163) 278)

LiMn₂O₄ coating

Soft X-ray absorption spectroscopy; ESD; Lithium rechargeable batteries; Thin film (Yoon, W.-S. (163) 207)

 $\mathrm{LiNi}_{0.5}\mathrm{Mn}_{0.5}\mathrm{O}_2$

Time-resolved X-ray diffraction; Lithium rechargeable batteries; LiNiO $_2$; LiNi $_{0.8}{\rm Co}_{0.15}{\rm Al}_{0.05}{\rm O}_2$ (Yoon, W.-S. (163) 219)

 $\mathrm{LiNi}_{0.8}\mathrm{Co}_{0.15}\mathrm{Al}_{0.05}\mathrm{O}_{2}$

Time-resolved X-ray diffraction; Lithium rechargeable batteries; LiNiO₂; LiNi_{O 5}Mn_{O 5}O₂ (Yoon, W.-S. (163) 219)

LiNi_{1/3}Co_{1/3}Mn_{1/3}O₂

Lithium-ion battery; Self-propagating solid-state metathesis; FESEM; Submicron-sized (He, Y.-S. (163) 1052)

 $\text{LiNi}_{1/3}\text{Co}_{1/3}\text{Mn}_{1/3}\text{O}_2$ with excess Li

Differential scanning calorimetry (DSC); LiBoB; Solid electrolyte interface (SEI) (Lu, W. (163) 1073)

LiNiO,

Soft X-ray absorption spectroscopy; Lithium rechargeable batteries; XAS (Yoon, W.-S. (163) 234)

LiNiO,

Time-resolved X-ray diffraction; Lithium rechargeable batteries; LiNi_{0.8}Co_{0.15}Al_{0.05}O₂; LiNi_{0.5}Mn_{0.5}O₂ (Yoon, W.-S. (163) 219)

LiNiVO₄ annealed films

Electrochemical properties; Anodes; rf-Sputtering; Rechargeable microbatteries (Reddy, M.V. (163) 1039)

LiPON

LLT; Ionic conductivity; Electrochemical stability (Lee, J.m. (163) 173) Liquid electrolyte

Low temperature; Li/S cell; TEGDME; DOXL; MA (Ryu, H.-S. (163) 201) Liquid hydrocarbons

Fuel cell; Hydrogen; Autothermal reforming; Diesel; Gasoline (Kang, I. (163) 538)

Liquid water

Fuel cell; Polymer-electrolyte; Transient model; Sweep simulations; Performance (Shah, A.A. (163) 792)

Liquid water removal

Fuel cell; PEMFCs; Two-fluid model; Two-phase flow; GDL/channel interface (He, G. (163) 863)

Liquid water transport

PEM fuel cell; Gas diffusion layer; Compression; Visualization (Bazylak, A. (163) 783)

Lithium batteries

Nickel-manganese; Redox reactions; Li₂MnO₃; Electrode (Kim, S.H. (163) 294)

Lithium batteries

Lithium iron phosphate; Carbon; Conductive coatings (Doeff, M.M. (163) 180)

Lithium batteries

Pyrite; Cathode materials; TEGDME; Li/FeS₂ (Choi, J.-W. (163) 158)

Lithium batteries

ZrO₂-coated LiCoO₂; In situ X-ray diffraction; Phase transitions (Chung, K.Y. (163) 185)

Lithium battery

Glass electrolyte; Electrical conductivity; Impedance; FTIR (Cho, K.I. (163) 223)

Lithium battery

Separator; Membrane; Lithium rechargeable battery; Mechanical strength; Tensile (Seol, W.-H. (163) 247)

Lithium battery modeling

State of charge estimation; Sliding mode observer; SOC (Kim, I.-S. (163) 584)

Lithium bis(oxalato)borate

Lithium oxalyldifluoroborate; Electrochemical impedance spectroscopy; Solid electrolyte interface; Graphite (Zhang, S.S. (163) 712)

Lithium corrosion

Thionyl chloride; Battery; Fade; Safety (Spotnitz, R.M. (163) 578)

Lithium dissolution/deposition behaviors

Lithium metal battery; Lithium powder; Dendritic growth (Kim, J.-S. (163) 258)

Lithium ion

Solid electrolyte; Hybrid; Sulfide glass; Conductivity (Hayashi, A. (163) 289)

Lithium ion polymer battery

Electrospinning; poly(vinylidene fluoride); Fibrous membrane electrolyte (Lee, S.W. (163) 41)

Lithium iron phosphate

Lithium batteries; Carbon; Conductive coatings (Doeff, M.M. (163) 180)

Lithium metal battery

Lithium dissolution/deposition behaviors; Lithium powder; Dendritic growth (Kim, J.-S. (163) 258)

Lithium metal secondary cell

Lithium powder; Thickness change; Electrolyte consumption (Chung, J.H. (163) 191)

Lithium oxalyldifluoroborate

Lithium bis(oxalato)borate; Electrochemical impedance spectroscopy; Solid electrolyte interface; Graphite (Zhang, S.S. (163) 712)

Lithium polymer battery

Ionic conductivity; Polymer blend; Poly(oligo[oxyethylene]oxyterephthaloyl); Solid polymer electrolyte (Oh, J.-S. (163) 229)

Lithium polymer battery

PoLiFlexTM; Energy density; Cathode; Anode (Ilic, D. (163) 243)

Lithium powder

Lithium dissolution/deposition behaviors; Lithium metal battery; Dendritic growth (Kim, J.-S. (163) 258)

Lithium powder

Lithium metal secondary cell; Thickness change; Electrolyte consumption (Chung, J.H. (163) 191)

Lithium rechargeable batteries

 $LiMn_2O_4$ coating; Soft X-ray absorption spectroscopy; ESD; Thin film (Yoon, W.-S. (163) 207)

Lithium rechargeable batteries

Soft X-ray absorption spectroscopy; ${\rm LiNiO_2}$; XAS (Yoon, W.-S. (163) 234) Lithium rechargeable batteries

Time-resolved X-ray diffraction; $LiNiO_2$; $LiNi_{0.8}Co_{0.15}Al_{0.05}O_2$; $LiNi_{0.5}Mn_{0.5}O_2$ (Yoon, W.-S. (163) 219)

Lithium rechargeable battery

Etoile-Rebatt technology; LiCoO₂; Recycle (Ra, D.-i. (163) 284)

Lithium rechargeable battery

Eutectic self-mixing method; LiCoO₂; Cathode (Lee, S.-W. (163) 274) Lithium rechargeable battery

Eutectic self-mixing method; LiMn₂O₄; Cathode (Kang, H.-K. (163) 166)

Lithium rechargeable battery

Eutectic self-mixing method; LiMn₂O₄; Cathode (Na, J.-W. (163) 278)

Lithium rechargeable battery

Separator; Membrane; Lithium battery; Mechanical strength; Tensile (Seol, W.-H. (163) 247)

Lithium-ion batteries

Positive electrodes; Olivine structure; Magnetic properties; High-temperature performance (Zaghib, K. (163) 560)

Lithium-ion batteries

Silicon anode; Volume changes; Cycle life (Kasavajjula, U. (163) 1002) Lithium-ion batteries

Silicon/graphite composites; Alloying electrode; Electrode structure (Yoshio, M. (163) 215)

Lithium-ion battery

2,2-Dimethoxy-propane (DMP); Electrolyte additive (Chang, C.-C. (163) 1058)

Lithium-ion battery

Al₂O₃ coated LiCoO₂; ²⁷Al MAS NMR; MEA-alumoxane (Fey, G.T.K. (163) 135)

Lithium-ion battery

Cathode; LiFePO₄; Surfactant; Sol-gel approach (Choi, D. (163) 1063)

Self-propagating solid-state metathesis; FESEM; Submicron-sized; LiNi_{1/3}Co_{1/3}Mn_{1/3}O₂ (He, Y.-S. (163) 1052)

Lithium-ion battery

Thermal abuse; Battery pack; Accelerating rate calorimetry (Spotnitz, R.M. (163) 1079)

Lithium-polymer battery

Model; Electrode configuration; Potential distribution; Current density distribution; Finite element method (Kwon, K.H. (163) 151)

Lithium-polymer cell

Conducting polymer; Nanofibre; Polyaniline; Polymer electrolyte (Sivakkumar, S.R. (163) 573)

LLT

LiPON; Ionic conductivity; Electrochemical stability (Lee, J.m. (163) 173) Low Pt loading

Proton exchange membrane (PEM) fuel cells; Galvanostatic pulse electrodeposition; Nafion-bonded carbon layer; Catalyst utilization efficiency (Lee, J. (163) 349)

Low temperature

Li/S cell; Liquid electrolyte; TEGDME; DOXL; MA (Ryu, H.-S. (163) 201)

Low-temperature combustion synthesis

Yttria-doped ceria; Electrolyte; Sintering; Conductivity (Xu, H. (163) 409)

MA

Low temperature; Li/S cell; Liquid electrolyte; TEGDME; DOXL (Ryu, H.-S. (163) 201)

Macro porous layer

PEM fuel cell; CFD modeling; Gas diffusion media; Micro porous layer (Shimpalee, S. (163) 480)

Magnetic properties

Lithium-ion batteries; Positive electrodes; Olivine structure; High-temperature performance (Zaghib, K. (163) 560)

Manganese dioxide

Carbon nanotubes; Catalyst; Fuel cells; Oxygen electrodes (Danilov, M.O. (163) 376)

Manganese dioxide

Pulse electrodeposition; Duty cycle; Rechargeable alkaline batteries; Cycle life; Bath temperature (Adelkhani, H. (163) 1090)

Manganese oxide

Electrochemical capacitors; Poly(3-methylthiophene); Pseudocapacitance (Rios, E.C. (163) 1136)

Manganese oxide cathode

Rechargeable alkaline batteries; Chemical additives; Reaction mechanisms (Raghuveer, V. (163) 598)

Mathematical model

Fuel cell stack; Engineering design; Fuel cell productivity; Proton exchange membrane fuel cell (PEMFC); Exergy analysis (Ghadamian, H. (163) 87)

MEA

Breathing process; Catalyst layer; Flat-pack; DMFCs (Yu, K.-C. (163) 34) MEA-alumoxane

 $\rm Al_2O_3$ coated LiCoO $_2;\,^{27}Al$ MAS NMR; Lithium-ion battery (Fey, G.T.K. (163) 135)

Mechanical alloying

LiFePO₄; Fe₂P; Olivine-type iron phosphate (Kim, C.W. (163) 144)

Mechanical strength

Separator; Membrane; Lithium battery; Lithium rechargeable battery; Tensile (Seol, W.-H. (163) 247)

Mechanical strength

SOFC; Ni-YSZ; Microstructure; Electrical conductivity (Yu, J.H. (163) 925)

Membrane

Fuel cells; Poly(vinyl alcohol); Polymer blend; Methanol crossover (DeLuca, N.W. (163) 386)

Membrane

PEEK; Binder; DMFC; Electrode and adhesion (Jung, H.-Y. (163) 56)

Membrane

Proton; Organic/inorganic hybrid; Phase separation; Imidazole; Sol-gel (Lee, S.-Y. (163) 27)

Membrane

Separator; Lithium battery; Lithium rechargeable battery; Mechanical strength; Tensile (Seol, W.-H. (163) 247)

Membrane

Sulfonated polyimide–silica nanocomposite; Urethane acrylate non-ionomer; Solvent effect; Crosslinker size (Lee, C.H. (163) 339)

Membrane-electrode assembly (MEA)

PEM fuel cells; Gas diffusion layer; Catalyst layer (Hwang, J.J. (163) 450) Metal oxide

Hydrogen; Partial oxidation; Syngas; Fuel processing; Millisecond reactor (Nguyen, B.N.T. (163) 623) Methane

Internal reforming; Ethanol; Methanol; SOFC (Laosiripojana, N. (163) 942) Methane decomposition

Carbon monoxide; Carbon dioxide; Gadolinia-doped ceria; Nickel; Iron (Huang, T.-J. (163) 309)

Methanol

Electrocatalyst; Fuel cell; PtAu; Anode; Formic acid (Choi, J.-H. (163) 71) Methanol

Internal reforming; Ethanol; Methane; SOFC (Laosiripojana, N. (163) 942)

Micro-DMFC; Micro-fuel cell (Kamarudin, S.K. (163) 742)

Methanol

Microreactor; Non-noble catalysts; Silica; Hydrogen production; Steam reforming (Shetty, K. (163) 630)

Methanol crossover

Direct methanol fuel cell (DMFC); Nafion®; Polybenzimidazole (PBI); Proton conducting membrane (Wycisk, R. (163) 9)

Methanol crossover

DMFC; Current distribution; Free-breathing segmented cathode; PVDF-g-PSSA (Saarinen, V. (163) 767)

Methanol crossover

Fuel cells; Membrane; Poly(vinyl alcohol); Polymer blend (DeLuca, N.W. (163) 386)

Methanol crossover

Hybrid membrane; Salt of heteropolyacid; Zirconium phosphate; Proton conductivity (Helen, M. (163) 433)

Methanol crossover

Hydrogels; Fuel diffusion rate; Flat-pack; DMFCs (Kim, W.-J. (163) 98) Methanol electrooxidation

Direct methanol fuel cell; Acidic and alkaline Pt precursors; Pt–Ru/C catalyst; Electrocatalytic activity (Wang, Z.-B. (163) 687)

Methanol oxidation reaction

Direct methanol fuel cell (DMFC); Electrocatalysis; Cyclic voltammetry; Multichannel microarray; Pt-Ru-W-Co (Cooper, J.S. (163) 330)

Methanol tolerance

Direct methanol fuel cell; Cathode; Nanoparticles; Platinum rhodium alloy (Park, K.-W. (163) 82)

Methanol tolerance

Platinum-iron alloy; Oxygen reduction reaction; Direct methanol fuel cell (Yuan, W. (163) 323)

Micro PEM fuel cell stack

Innovative bipolar plate; Microfabrication; Stack performance (Hsieh, S.-S. (163) 440)

Micro porous layer

PEM fuel cell; CFD modeling; Gas diffusion media; Macro porous layer (Shimpalee, S. (163) 480)

Micro SOFC

Current collection; Model; Tubular SOFCs (Suzuki, T. (163) 736)

Micro tubular

SOFC; Fabrication; Modeling; Microstructure (Funahashi, Y. (163) 730) Micro-DMFC

Micro-fuel cell; Methanol (Kamarudin, S.K. (163) 742)

Microfabrication

Micro PEM fuel cell stack; Innovative bipolar plate; Stack performance (Hsieh, S.-S. (163) 440)

Micro-fuel cell

Micro-DMFC; Methanol (Kamarudin, S.K. (163) 742)

Micro-laye

PEMFC; Gas diffusion layer; Carbon nano-fiber; Carbon nano-tube (Park, G.-G. (163) 113)

Microporous layer

Proton exchange membrane fuel cell; Gas diffusion layer; Carbon loading; Water management (Park, S. (163) 357)

Microreactor

Non-noble catalysts; Silica; Methanol; Hydrogen production; Steam reforming (Shetty, K. (163) 630)

Microstructure

SOFC; Micro tubular; Fabrication; Modeling (Funahashi, Y. (163) 730)

Microstructure

SOFC; Ni-YSZ; Electrical conductivity; Mechanical strength (Yu, J.H. (163) 925)

Microwave

SOFC; Synthesis; Doped $LaGaO_3$; Solution polymerization (Zhai, Y. (163) 316)

Millisecond reactor

Hydrogen; Partial oxidation; Syngas; Metal oxide; Fuel processing (Nguyen, B.N.T. (163) 623)

Model

Current collection; Tubular SOFCs; Micro SOFC (Suzuki, T. (163) 736) Model

Lithium-polymer battery; Electrode configuration; Potential distribution; Current density distribution; Finite element method (Kwon, K.H. (163) 151)

Modeling

SOFC; Micro tubular; Fabrication; Microstructure (Funahashi, Y. (163) 730)

Molecular dynamics

First-principle calculation; Hydrogen adsorption; Carbon nanotube (CNT); Aluminum; Quantum energy density (Nakano, H. (163) 125)

Morphology

Nanocrystalline; Particles; TiO₂; Ultrasonic (Kim, D.H. (163) 196)

Morphology

SOFC; Redox; Anode; Strength; Particle size (Pusz, J. (163) 899)

Morphology

Solid acid; Particles; Polyol; Precipitation (Ahn, Y.S. (163) 107)

Multi-cell stack

Solid oxide fuel cells; Gelcasting; Screen printing; Segmented-in-series; Redox cycling (Pillai, M.R. (163) 959)

Multichannel microarray

Direct methanol fuel cell (DMFC); Electrocatalysis; Methanol oxidation reaction; Cyclic voltammetry; Pt-Ru-W-Co (Cooper, J.S. (163) 330)

NaAlH₄

TiO₂; VCl₃; HfCl₄; Hydrogen desorption/absorption (Suttisawat, Y. (163) 996)

Direct methanol fuel cell (DMFC); Polybenzimidazole (PBI); Proton conducting membrane; Methanol crossover (Wycisk, R. (163) 9)

Nafion

Zirconium(IV) oxide; Composite membranes; DH-PEFCs (Saccà, A. (163) 47)

Nafion addition

Hydrogen evolution; Direct borohydride fuel cell; Anode modification; Cell performance (Li, Z.P. (163) 555)

Nafion-bonded carbon layer

Proton exchange membrane (PEM) fuel cells; Galvanostatic pulse electrodeposition; Low Pt loading; Catalyst utilization efficiency (Lee, J. (163) 349)

Nafion-SiO₂ membrane

PFG-NMR; DMFCs; Recast Nafion (Baglio, V. (163) 52)

Nanocomposite

Capacity; Co-sputtering; Cu–Si; Li batteries; Cycling performance (Ahn, H.-J. (163) 211)

Nano-composite powder

Solid oxide fuel cell; Ni–YSZ anode; Conjugation; Durability (Kim, S.-D. (163) 392)

Nanocrystalline

Particles; TiO₂; Morphology; Ultrasonic (Kim, D.H. (163) 196)

Nanofibre

Conducting polymer; Lithium-polymer cell; Polyaniline; Polymer electrolyte (Sivakkumar, S.R. (163) 573)

Nanoparticles

Direct methanol fuel cell; Cathode; Methanol tolerance; Platinum rhodium alloy (Park, K.-W. (163) 82)

Nanotechnology

Ruthenium; Platinum; Small organic molecules; Oxidation (Lemos, S.G. (163) 694)

Natural gas

Fuel processor; Steam reforming; Residential cogeneration; Polymer electrolyte membrane fuel cell (Seo, Y.T. (163) 119)

Natural gas

Hydrogen; Sub-quality natural gas; Thermodynamic analysis hydrogen sulfide; Sulfur dioxide; Carbon disulfide and methane (Huang, C. (163) 645)

Negative plate oxidation

Preservation; Pretreatment; Drying agent (Murthy, K.S.N. (163) 1086) Neutron imaging technique

PEM fuel cells; Flow channel design; Water flooding (Li, X. (163) 932)

Ni-Cd batteries

Recycling; Cadmium (Freitas, M.B.J.G. (163) 1113)

Nickel

Cobalt; Copper; Hydrogen generation; Catalyst; Ammonia-borane (Xu, Q. (163) 364)

Nickel

Methane decomposition; Carbon monoxide; Carbon dioxide; Gadolinia-doped ceria; Iron (Huang, T.-J. (163) 309)

Nickel-manganese

Lithium batteries; Redox reactions; Li₂MnO₃; Electrode (Kim, S.H. (163) 294)

Ni-YSZ

SOFC; Microstructure; Electrical conductivity; Mechanical strength (Yu, J.H. (163) 925)

Ni-YSZ anode

Solid oxide fuel cell; Nano-composite powder; Conjugation; Durability (Kim, S.-D. (163) 392)

Nonflammability

Li-ion battery; Polymeric gel electrolyte; Additive (Yoshimoto, N. (163) 238)

Non-linear systems

PEMFC; Dynamic modeling (Haddad, A. (163) 420)

Non-noble catalysts

Microreactor; Silica; Methanol; Hydrogen production; Steam reforming (Shetty, K. (163) 630)

Numerical simulation

PEM fuel cell; Cross flow; Permeability; Serpentine flow channel; Experimental measurement (Park, J. (163) 852)

ODE

Solid oxide; Fuel cell; SOFC; First principle model; BOP (Murshed, A.M. (163) 829)

Olivine structure

Lithium-ion batteries; Positive electrodes; Magnetic properties; High-temperature performance (Zaghib, K. (163) 560)

Olivine-type iron phosphate

LiFePO₄; Fe₂P; Mechanical alloying (Kim, C.W. (163) 144)

Open circuit voltage (OCV)

High temperature; PEM fuel cells; Apparent exchange current density; Hydrogen crossover; AC impedance (Zhang, J. (163) 532)

Organic radical battery

Al-laminated film package; PTMA (Nakahara, K. (163) 1109)

Organic/inorganic hybrid

Proton; Membrane; Phase separation; Imidazole; Sol-gel (Lee, S.-Y. (163) 27)

Orthophosphates

Cathode; Li-ion batteries; Carbon; Electronic conductivity (Wolfenstine, J. (163) 1069)

Oxidation

Ruthenium; Platinum; Small organic molecules; Nanotechnology (Lemos, S.G. (163) 694)

Oxygen electrodes

Carbon nanotubes; Catalyst; Fuel cells; Manganese dioxide (Danilov, M.O. (163) 376)

Oxygen reduction

Fuel cells; Polymer electrolyte; Electrocatalyst; Pt; TiO₂ (Gustavsson, M. (163) 670)

Oxygen reduction reaction

Platinum-iron alloy; Direct methanol fuel cell; Methanol tolerance (Yuan, W. (163) 323)

Oxygen reduction reaction

Proton exchange membrane fuel cells; Platinum-cobalt alloy; Chemical vapor deposition; Half-cell test (Seo, S.J. (163) 403)

Partial oxidation

Hydrogen; Syngas; Metal oxide; Fuel processing; Millisecond reactor (Nguyen, B.N.T. (163) 623)

Particle size

SOFC; Redox; Anode; Strength; Morphology (Pusz, J. (163) 899)

Particles

Nanocrystalline; TiO₂; Morphology; Ultrasonic (Kim, D.H. (163) 196)

Particle:

Solid acid; Polyol; Morphology; Precipitation (Ahn, Y.S. (163) 107)

Passive film

Plasma nitriding; Austenitic stainless steel; Bipolar plate; ICR (Tian, R.J. (163) 718)

PC

PDMAEMA; PEO; Tetraethylene glycol dimethyl ether; EC; DEP (Cha, E.H. (163) 269)

Pd/MWCNT

Ethanol oxidation; Electrocatalyst; Fuel cells; Anode (Zheng, H.T. (163) 371) PDMAEMA

PEO; Tetraethylene glycol dimethyl ether; EC; PC; DEP (Cha, E.H. (163) 269)

PEEK

Binder; DMFC; Membrane; Electrode and adhesion (Jung, H.-Y. (163) 56) PEFC

sPEEK membranes; Solvents influence; SAXS (Carbone, A. (163) 18)

PEM

Fuel cell; Freezing point; Ice; Super-cool (Ishikawa, Y. (163) 707)

PEM fuel cell

Bipolar plate (Hung, Y. (163) 509)

PEM fuel cell

CFD modeling; Gas diffusion media; Micro porous layer; Macro porous layer (Shimpalee, S. (163) 480)

PEM fuel cell

Cross flow; Permeability; Serpentine flow channel; Numerical simulation; Experimental measurement (Park, J. (163) 852)

PEM fuel cell

Flow rate; Humidification; Relative humidity; Fuel cell performance (Guvelioglu, G.H. (163) 881)

PEM fuel cell

Gas diffusion layer; Liquid water transport; Compression; Visualization (Bazylak, A. (163) 783)

PEM fuel cell durability

Platinum electrocatalyst; Electrochemically active surface area; Catalyst aging; Electrochemical potential cycling; Fuel cell drive cycle (Borup, R.L. (163) 76)

PEM fuel cells

Open circuit voltage (OCV); High temperature; Apparent exchange current density; Hydrogen crossover; AC impedance (Zhang, J. (163) 532)

PEM fuel cells

Contact resistance; Surface roughness (Zhou, Y. (163) 776)

PEM fuel cells

Flow channel design; Water flooding; Neutron imaging technique (Li, X. (163) 932)

PEM fuel cells

Membrane-electrode assembly (MEA); Gas diffusion layer; Catalyst layer (Hwang, J.J. (163) 450)

PEMFO

Fractal model; Relative permeability; Gas diffusion layer (GDL); Fuel cell (He, G. (163) 845)

PEMFC

Fuel cell hybrid bus; Energy management strategy; Fuel economy; Performance degradation (Ouyang, M. (163) 467)

PEMFC

Dynamic loading; Current distribution; Temperature distribution (Yan, X. (163) 965)

PEMFC

Dynamic modeling; Non-linear systems (Haddad, A. (163) 420)

PEMFC

Gas diffusion layer; Micro-layer; Carbon nano-fiber; Carbon nano-tube (Park, G.-G. (163) 113)

PEMFCs

Fuel cell; Two-fluid model; Two-phase flow; GDL/channel interface; Liquid water removal (He, G. (163) 863)

PEC

PDMAEMA; Tetraethylene glycol dimethyl ether; EC; PC; DEP (Cha, E.H. (163) 269)

Performance

Fuel cell; Polymer-electrolyte; Transient model; Sweep simulations; Liquid water (Shah, A.A. (163) 792)

Performance degradation

Fuel cell hybrid bus; PEMFC; Energy management strategy; Fuel economy (Ouyang, M. (163) 467)

Permeability

PEM fuel cell; Cross flow; Serpentine flow channel; Numerical simulation; Experimental measurement (Park, J. (163) 852)

PFG-NMR

 $\mathsf{DMFCs};$ Nafion– SiO_2 membrane; Recast Nafion (Baglio, V. (163) 52)

Phase separation

Proton; Membrane; Organic/inorganic hybrid; Imidazole; Sol–gel (Lee, S.-Y. (163) 27)

Phase transitions

ZrO₂-coated LiCoO₂; In situ X-ray diffraction; Lithium batteries (Chung, K.Y. (163) 185)

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Reversible fuel cell; Residential power; Dynamic model; Ultra-capacitor; Energy storage (Maclay, J.D. (163) 915)

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Integrated composite membrane electrode assembly; Porous titanium sheet; DMFC (Wan, N. (163) 724)

Plasma nitriding

Austenitic stainless steel; Bipolar plate; Passive film; ICR (Tian, R.J. (163) 718) Platinum

Ruthenium; Small organic molecules; Oxidation; Nanotechnology (Lemos, S.G. (163) 694)

Platinum electrocatalyst

PEM fuel cell durability; Electrochemically active surface area; Catalyst aging; Electrochemical potential cycling; Fuel cell drive cycle (Borup, R.L. (163) 76)

Platinum rhodium alloy

Direct methanol fuel cell; Cathode; Methanol tolerance; Nanoparticles (Park, K.-W. (163) 82)

Platinum-cobalt alloy

Proton exchange membrane fuel cells; Chemical vapor deposition; Halfcell test; Oxygen reduction reaction (Seo, S.J. (163) 403)

Platinum-iron alloy

Oxygen reduction reaction; Direct methanol fuel cell; Methanol tolerance (Yuan, W. (163) 323)

PoLiFlexTM

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Polypyrrole; Electrochemical; Supercapacitor (Wang, J. (163) 1119)

Poly(3-methylthiophene)

Electrochemical capacitors; Manganese oxide; Pseudocapacitance (Rios, E.C. (163) 1136)

Polyaniline

Conducting polymer; Lithium-polymer cell; Nanofibre; Polymer electrolyte (Sivakkumar, S.R. (163) 573)

Polyaniline

Fibre electrode; Carbon nanotubes; Wet-spinning; All-polymer battery; Ionic liquid (Wang, C.Y. (163) 1104)

Polybenzimidazole (PBI)

Direct methanol fuel cell (DMFC); Nafion®; Proton conducting membrane; Methanol crossover (Wycisk, R. (163) 9)

Polyether sulfone

Conducting polymer; Graphite composites; Bipolar plates; Polyphenylene sulfide; Hybrid materials; Fuel cell (Radhakrishnan, S. (163) 701)

Poly(ethylene oxide)

Comblike polymer; Polymer electrolyte; Ionic conductivity; Electrochemical stability, Mechanical strength (Itoh, T. (163) 252)

Polymer blend

Fuel cells; Membrane; Poly(vinyl alcohol); Methanol crossover (DeLuca, N.W. (163) 386)

Polymer blend

Ionic conductivity; Lithium polymer battery; Poly(oligo[oxyethylene] oxyterephthaloyl); Solid polymer electrolyte (Oh. J.-S. (163) 229)

Polymer electrolyte

Chitosan; Ammonium nitrate; Ethylene carbonate; Proton battery (Ng, L.S. (163) 382)

Polymer electrolyte

Comblike polymer; Poly(ethylene oxide); Ionic conductivity; Electrochemical stability, Mechanical strength (Itoh, T. (163) 252)

Polymer electrolyte

Conducting polymer; Lithium-polymer cell; Nanofibre; Polyaniline (Sivakkumar, S.R. (163) 573)

Polymer electrolyte

Dual-layer; Compatible layer; Li⁺ deposition; Cycle life; Homogeneous electrolyte zone (Lee, Y.-G. (163) 264)

Polymer electrolyte

Electric double layer capacitors; Electrochemical characteristics; Proton exchange membrane; Sulfonated poly(ether ether ketone) (Kim, D.-W. (163) 300)

Polymer electrolyte

Fuel cells; Oxygen reduction; Electrocatalyst; Pt; TiO₂ (Gustavsson, M. (163) 670)

Polymer electrolyte fuel cell

Solid oxide fuel cell; Combined system; Steam reforming (Yokoo, M. (163) 891)

Polymer electrolyte membrane

Proton conduction; Fuel cell; Polyparabanic acid (Aihara, Y. (163) 60) Polymer electrolyte membrane fuel cell

Fuel processor; Natural gas; Steam reforming; Residential cogeneration (Seo, Y.T. (163) 119)

Polymer electrolyte membrane fuel cell

Zirconium phosphate sulpfophenylenphosphonate; Sulfonated poly(ether ether ketone); Composite membrane; Solid proton conductor (Krishnan, P. (163) 2)

Polymer-electrolyte

Fuel cell; Transient model; Sweep simulations; Liquid water; Performance (Shah, A.A. (163) 792)

Polymeric gel electrolyte

Li-ion battery; Nonflammability; Additive (Yoshimoto, N. (163) 238)

Polyol

Solid acid; Particles; Morphology; Precipitation (Ahn, Y.S. (163) 107)

Poly(oligo[oxyethylene]oxyterephthaloyl)

Ionic conductivity; Lithium polymer battery; Polymer blend; Solid polymer electrolyte (Oh, J.-S. (163) 229)

Polyparabanic acid

Proton conduction; Fuel cell; Polymer electrolyte membrane (Aihara, Y. (163) 60)

Polyphenylene sulfide

Conducting polymer; Graphite composites; Bipolar plates; Polyether sulfone; Hybrid materials; Fuel cell (Radhakrishnan, S. (163) 701)

Polypyrrole

Bipolar plates; Galvanostatic; Cyclic voltammometric; Corrosion (Wang, Y. (163) 500)

Polypyrrole

Poly (3,4-ethylenedioxythiophene); Electrochemical; Supercapacitor (Wang, J. (163) 1119)

Poly(vinyl alcohol)

Fuel cells; Membrane; Polymer blend; Methanol crossover (DeLuca, N.W. (163) 386)

poly(vinylidene fluoride)

Lithium ion polymer battery; Electrospinning; Fibrous membrane electrolyte (Lee, S.W. (163) 41)

Pore-filling

Proton conducting membrane; Layer-by-layer deposition (Son, H.D. (163) 66)

Porous titanium sheet

Integrated composite membrane electrode assembly; DMFC; Planar stack (Wan, N. (163) 724)

Positive electrodes

Lithium-ion batteries; Olivine structure; Magnetic properties; High-temperature performance (Zaghib, K. (163) 560)

Potential distribution

Lithium-polymer battery; Model; Electrode configuration; Current density distribution; Finite element method (Kwon, K.H. (163) 151)

Precipitation

Fuel cell; Catalysts; Pt/carbon; Carbon black; Cathode (Kim, M. (163) 93) Precipitation

Solid acid; Particles; Polyol; Morphology (Ahn, Y.S. (163) 107)

Preferential oxidation of CO

Pt-Au; Cerium oxide (Monyanon, S. (163) 547)

Preservation

Negative plate oxidation; Pretreatment; Drying agent (Murthy, K.S.N. (163) 1086)

Pressurized hybrid system

Solid oxide fuel cell; Gas turbine; Ambient pressure hybrid system (Park, S.K. (163) 490)

Pretreatment

Negative plate oxidation; Preservation; Drying agent (Murthy, K.S.N. (163) 1086)

Proton

Membrane; Organic/inorganic hybrid; Phase separation; Imidazole; Sol–gel (Lee, S.-Y. (163) 27)

Proton battery

Chitosan; Ammonium nitrate; Ethylene carbonate; Polymer electrolyte (Ng, L.S. (163) 382)

Proton conducting membrane

Direct methanol fuel cell (DMFC); Nafion®; Polybenzimidazole (PBI); Methanol crossover (Wycisk, R. (163) 9)

Proton conducting membrane

Layer-by-layer deposition; Pore-filling (Son, H.D. (163) 66)

Proton conduction

Fuel cell; Polymer electrolyte membrane; Polyparabanic acid (Aihara, Y. (163) 60)

Proton conductivity

Hybrid membrane; Salt of heteropolyacid; Zirconium phosphate; Methanol crossover (Helen, M. (163) 433)

Proton exchange membrane

Electric double layer capacitors; Electrochemical characteristics; Polymer electrolyte; Sulfonated poly(ether ether ketone) (Kim, D.-W. (163) 300)

Proton exchange membrane fuel cell

Dynamic modeling; Data comparison; Simplified three-dimensional geometry (Mueller, F. (163) 813)

Proton exchange membrane fuel cell

Gas diffusion layer; Microporous layer; Carbon loading; Water management (Park, S. (163) 357)

Proton exchange membrane fuel cell (PEMFC)

Fuel cell stack; Mathematical model; Engineering design; Fuel cell productivity; Exergy analysis (Ghadamian, H. (163) 87)

Proton exchange membrane fuel cells

Platinum-cobalt alloy; Chemical vapor deposition; Half-cell test; Oxygen reduction reaction (Seo, S.J. (163) 403)

Proton exchange membrane (PEM) fuel cells

Galvanostatic pulse electrodeposition; Nafion-bonded carbon layer; Low Pt loading; Catalyst utilization efficiency (Lee, J. (163) 349)

Pseudocapacitance

Electrochemical capacitors; Manganese oxide; Poly(3-methylthiophene) (Rios, E.C. (163) 1136)

Pt

Fuel cells; Polymer electrolyte; Oxygen reduction; Electrocatalyst; ${\rm TiO_2}$ (Gustavsson, M. (163) 670)

Pt electrodes

Hydrogen oxidation reaction; Activation polarization; Exchange current density (Mann, R.F. (163) 678)

Pt/carbon

Fuel cell; Catalysts; Precipitation; Carbon black; Cathode (Kim, M. (163) 93) $\mbox{Pt/CNTs}$

Fuel cell; Self-humidifying membrane; Composite membrane (Liu, Y.-H. (163) 806)

PtAu

Electrocatalyst; Fuel cell; Anode; Formic acid; Methanol (Choi, J.-H. (163) 71)

Pt–Au

Cerium oxide: Preferential oxidation of CO (Monyanon, S. (163) 547)

Organic radical battery; Al-laminated film package (Nakahara, K. (163)

Pt-Ru/C catalyst

Direct methanol fuel cell; Acidic and alkaline Pt precursors; Methanol electrooxidation; Electrocatalytic activity (Wang, Z.-B. (163) 687)

Pt-Ru-W-Co

Direct methanol fuel cell (DMFC); Electrocatalysis; Methanol oxidation reaction; Cyclic voltammetry; Multichannel microarray (Cooper, J.S. (163) 330)

Pulse electrodeposition

Duty cycle; Manganese dioxide; Rechargeable alkaline batteries; Cycle life; Bath temperature (Adelkhani, H. (163) 1090)

PVDF-g-PSSA

DMFC; Current distribution; Free-breathing segmented cathode; Methanol crossover (Saarinen, V. (163) 767)

Pyrite

Cathode materials; TEGDME; Li/FeS_2 ; Lithium batteries (Choi, J.-W. (163) 158)

Quantum energy density

First-principle calculation; Molecular dynamics; Hydrogen adsorption; Carbon nanotube (CNT); Aluminum (Nakano, H. (163) 125)

Reaction mechanisms

Rechargeable alkaline batteries; Manganese oxide cathode; Chemical additives (Raghuveer, V. (163) 598)

Recast Nafion

PFG-NMR; DMFCs; Nafion–SiO₂ membrane (Baglio, V. (163) 52)

Recast Nafion film

Direct methanol fuel cell; Binder; Annealing (Jung, H.-Y. (163) 951)

Rechargeable alkaline batteries

Pulse electrodeposition; Duty cycle; Manganese dioxide; Cycle life; Bath temperature (Adelkhani, H. (163) 1090)

Rechargeable alkaline batteries

Manganese oxide cathode; Chemical additives; Reaction mechanisms (Raghuveer, V. (163) 598)

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 $LiNiVO_4$ annealed films; Electrochemical properties; Anodes; rf-Sputtering (Reddy, M.V. (163) 1039)

Recycle

Etoile-Rebatt technology; LiCoO₂; Lithium rechargeable battery (Ra, D.-i. (163) 284)

Recycling

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Redox

SOFC; Anode; Strength; Morphology; Particle size (Pusz, J. (163) 899) Redox cycling

Solid oxide fuel cells; Gelcasting; Screen printing; Segmented-in-series; Multi-cell stack (Pillai, M.R. (163) 959)

Redox reactions

Lithium batteries; Nickel-manganese; Li₂MnO₃; Electrode (Kim, S.H. (163) 294)

Relative humidity

PEM fuel cell; Flow rate; Humidification; Fuel cell performance (Guvelioglu, G.H. (163) 881)

Relative permeability

Fractal model; Gas diffusion layer (GDL); PEMFC; Fuel cell (He, G. (163) 845) Residential cogeneration

Fuel processor; Natural gas; Steam reforming; Polymer electrolyte membrane fuel cell (Seo, Y.T. (163) 119)

Residential power

Reversible fuel cell; Dynamic model; Ultra-capacitor; Energy storage; Photovoltaic (Maclay, J.D. (163) 915)

Reversible fuel cell

Residential power; Dynamic model; Ultra-capacitor; Energy storage; Photovoltaic (Maclay, J.D. (163) 915)

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Solid oxide steam electrolyzer (SOSE); Dual modes; Concentration overpotentials (Ni, M. (163) 460)

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Hydrogen fuel cell; Bipolar plate (Tawfik, H. (163) 754)

rf-Sputtering

LiNiVO₄ annealed films; Electrochemical properties; Anodes; Rechargeable microbatteries (Reddy, M.V. (163) 1039)

Ruthenium

Platinum; Small organic molecules; Oxidation; Nanotechnology (Lemos, S.G. (163) 694)

Safety

Thionyl chloride; Battery; Fade; Lithium corrosion (Spotnitz, R.M. (163) 578) Salt of heteropolyacid

Hybrid membrane; Zirconium phosphate; Methanol crossover; Proton conductivity (Helen, M. (163) 433)

SAXS

sPEEK membranes; Solvents influence; PEFC (Carbone, A. (163) 18) Screen printing

Solid oxide fuel cells; Gelcasting; Segmented-in-series; Redox cycling; Multi-cell stack (Pillai, M.R. (163) 959)

Segmented-in-series

Solid oxide fuel cells; Gelcasting; Screen printing; Redox cycling; Multicell stack (Pillai, M.R. (163) 959)

Self-humidifying membrane

Fuel cell; Composite membrane; Pt/CNTs (Liu, Y.-H. (163) 806)

Self-propagating solid-state metathesis

Lithium-ion battery; FESEM; Submicron-sized; LiNi $_{\rm 1/3}{\rm Co}_{\rm 1/3}{\rm Mn}_{\rm 1/3}{\rm O}_{\rm 2}$ (He, Y.-S. (163) 1052)

Separator

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PEM fuel cell; Cross flow; Permeability; Numerical simulation; Experimental measurement (Park, J. (163) 852)

Silica

Microreactor; Non-noble catalysts; Methanol; Hydrogen production; Steam reforming (Shetty, K. (163) 630)

Silicon anode

Lithium-ion batteries; Volume changes; Cycle life (Kasavajjula, U. (163) 1002)

Silicon/graphite composites

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Hydrogen; Sub-quality natural gas; Autothermal process; Hydrogen sulfide; Carbonyl sulfide (Huang, C. (163) 637)

SOC

State of charge estimation; Sliding mode observer; Lithium battery modeling (Kim, I.-S. (163) 584)

SOFC

Internal reforming; Ethanol; Methanol; Methane (Laosiripojana, N. (163) 942)

SOFC

Micro tubular; Fabrication; Modeling; Microstructure (Funahashi, Y. (163) 730)

SOFC

Ni-YSZ; Microstructure; Electrical conductivity; Mechanical strength (Yu, J.H. (163) 925)

SOFC

Redox; Anode; Strength; Morphology; Particle size (Pusz, J. (163) 899)

SOFC

Synthesis; Microwave; Doped LaGaO₃; Solution polymerization (Zhai, Y. (163) 316)

SOFC

Solid oxide; Fuel cell; ODE; First principle model; BOP (Murshed, A.M. (163) 829)

Soft X-ray absorption spectroscopy

LiMn₂O₄ coating; ESD; Lithium rechargeable batteries; Thin film (Yoon, W.-S. (163) 207)

Soft X-ray absorption spectroscopy

LiNiO₂; Lithium rechargeable batteries; XAS (Yoon, W.-S. (163) 234) Sol-gel

Proton; Membrane; Organic/inorganic hybrid; Phase separation; Imidazole (Lee, S.-Y. (163) 27)

Sol-gel approach

Lithium-ion battery; Cathode; LiFePO₄; Surfactant (Choi, D. (163) 1063) olid acid

Particles; Polyol; Morphology; Precipitation (Ahn, Y.S. (163) 107)

Solid electrolyte

Hybrid; Lithium ion; Sulfide glass; Conductivity (Hayashi, A. (163) 289) Solid electrolyte interface

Isocyanate; Electrolyte additive; Graphite; Li-ion battery (Zhang, S.S. (163) 567) Solid electrolyte interface

Lithium oxalyldifluoroborate; Lithium bis(oxalato)borate; Electrochemical impedance spectroscopy; Graphite (Zhang, S.S. (163) 712)

Solid electrolyte interface (SEI)

Differential scanning calorimetry (DSC); LiBoB; LiNi_{1/3}Co_{1/3}Mn_{1/3}O₂ with excess Li (Lu, W. (163) 1073)

Solid oxide

Fuel cell; SOFC; ODE; First principle model; BOP (Murshed, A.M. (163) 829) Solid oxide

Syngas; Coal; Fuel cell; Trace specie (Trembly, J.P. (163) 985)

Solid oxide fuel cell

Gas turbine; Pressurized hybrid system; Ambient pressure hybrid system (Park, S.K. (163) 490)

Solid oxide fuel cell

Hybrid system; Dynamic model (Zhang, X. (163) 523)

Solid oxide fuel cell

Ni-YSZ anode; Nano-composite powder; Conjugation; Durability (Kim, S.-D. (163) 392)

Solid oxide fuel cell

Polymer electrolyte fuel cell; Combined system; Steam reforming (Yokoo, M. (163) 891)

Solid oxide fuel cells

Gelcasting; Screen printing; Segmented-in-series; Redox cycling; Multicell stack (Pillai, M.R. (163) 959) Solid oxide fuel cells (SOFCs)

Spin smoothing; YSZ thin film (Wang, J. (163) 956)

Solid oxide steam electrolyzer (SOSE)

Reversible solid oxide fuel cell (RSOFC); Dual modes; Concentration overpotentials (Ni, M. (163) 460)

Solid polymer electrolyte

Ionic conductivity; Lithium polymer battery; Polymer blend; Poly(oligo[oxyethylene]oxyterephthaloyl) (Oh, J.-S. (163) 229)

Solid proton conductor

Zirconium phosphate sulpfophenylenphosphonate; Sulfonated poly(ether ether ketone); Composite membrane; Polymer electrolyte membrane fuel cell (Krishnan, P. (163) 2)

Solution polymerization

SOFC; Synthesis; Microwave; Doped LaGaO₃ (Zhai, Y. (163) 316)

Solvent effect

Sulfonated polyimide–silica nanocomposite; Membrane; Urethane acrylate nonionomer; Crosslinker size (Lee, C.H. (163) 339)

Solvents influence

sPEEK membranes; SAXS; PEFC (Carbone, A. (163) 18)

Specific capacitance

CNTs on porous alumina templates; EDLC (Wen, S. (163) 304)

sPEEK membranes

Solvents influence; SAXS; PEFC (Carbone, A. (163) 18)

Spin smoothing

Solid oxide fuel cells (SOFCs); YSZ thin film (Wang, J. (163) 956)

Stack performance

Micro PEM fuel cell stack; Innovative bipolar plate; Microfabrication (Hsieh, S.-S. (163) 440)

Stand-alone power systems

Wind; Energy storage (Lone, S.A. (163) 604)

State of charge estimation

Sliding mode observer; SOC; Lithium battery modeling (Kim, I.-S. (163) 584)

Steam reforming

Fuel processor; Natural gas; Residential cogeneration; Polymer electrolyte membrane fuel cell (Seo, Y.T. (163) 119)

Steam reforming

Microreactor; Non-noble catalysts; Silica; Methanol; Hydrogen production (Shetty, K. (163) 630)

Steam reforming

Solid oxide fuel cell; Polymer electrolyte fuel cell; Combined system (Yokoo, M. (163) 891)

Strength

SOFC; Redox; Anode; Morphology; Particle size (Pusz, J. (163) 899) Submicron-sized

Lithium-ion battery; Self-propagating solid-state metathesis; FESEM; LiNi $_{1/3}$ Co $_{1/3}$ Mn $_{1/3}$ O $_2$ (He, Y.-S. (163) 1052)

Sub-quality natural gas

Hydrogen; Natural gas; Thermodynamic analysis hydrogen sulfide; Sulfur dioxide; Carbon disulfide and methane (Huang, C. (163) 645)

Sub-quality natural gas

Hydrogen; SMR; Autothermal process; Hydrogen sulfide; Carbonyl sulfide (Huang, C. (163) 637)

Sulfide glass

Solid electrolyte; Hybrid; Lithium ion; Conductivity (Hayashi, A. (163) 289) Sulfonated poly(ether ether ketone)

Electric double layer capacitors; Electrochemical characteristics; Polymer electrolyte; Proton exchange membrane (Kim, D.-W. (163) 300)

Sulfonated poly(ether ether ketone)

Zirconium phosphate sulpfophenylenphosphonate; Composite membrane; Solid proton conductor; Polymer electrolyte membrane fuel cell (Krishnan, P. (163) 2)

Sulfonated polyimide-silica nanocomposite

Membrane; Urethane acrylate nonionomer; Solvent effect; Crosslinker size (Lee, C.H. (163) 339)

Sulfur dioxide

Hydrogen; Natural gas; Sub-quality natural gas; Thermodynamic analysis hydrogen sulfide; Carbon disulfide and methane (Huang, C. (163) 645)

Supercapacitor

Poly (3,4-ethylenedioxythiophene); Polypyrrole; Electrochemical (Wang, J. (163) 1119)

Supercapacitors

Anodic deposition; Hydrous ruthenium oxide; Acetate ion; EIS analysis (Hu, C.-C. (163) 1125)

Super-cool

PEM; Fuel cell; Freezing point; Ice (Ishikawa, Y. (163) 707)

Surface roughness

PEM fuel cells; Contact resistance (Zhou, Y. (163) 776)

Surface treatment

Carbon aerogel; Activation; Infrared spectroscopy; Electrochemical properties (Fang, B. (163) 616)

Surfactant

Lithium-ion battery; Cathode; LiFePO₄; Sol-gel approach (Choi, D. (163) 1063)

Sweep simulations

Fuel cell; Polymer-electrolyte; Transient model; Liquid water; Performance (Shah, A.A. (163) 792)

Syngas

Hydrogen; Partial oxidation; Metal oxide; Fuel processing; Millisecond reactor (Nguyen, B.N.T. (163) 623)

Syngas

Coal; Solid oxide; Fuel cell; Trace specie (Trembly, J.P. (163) 985)

Synthesis

SOFC; Microwave; Doped $LaGaO_3$; Solution polymerization (Zhai, Y. (163) 316)

System model

Intermediate temperature solid oxide fuel cell; ZEBRA battery; Hybrid vehicle (Brett, D.J.L. (163) 514)

TEGDME

Low temperature; Li/S cell; Liquid electrolyte; DOXL; MA (Ryu, H.-S. (163) 201)

TEGDME

Pyrite; Cathode materials; Li/FeS₂; Lithium batteries (Choi, J.-W. (163) 158) Temperature distribution

PEMFC; Dynamic loading; Current distribution (Yan, X. (163) 965)

Tensile

Separator; Membrane; Lithium battery; Lithium rechargeable battery; Mechanical strength (Seol, W.-H. (163) 247)

Tetraethylene glycol dimethyl ether

PDMAEMA; PEO; EC; PC; DEP (Cha, E.H. (163) 269)

Thermal abuse

Lithium-ion battery; Battery pack; Accelerating rate calorimetry (Spotnitz, R.M. (163) 1079)

Thermodynamic analysis hydrogen sulfide

Hydrogen; Natural gas; Sub-quality natural gas; Sulfur dioxide; Carbon disulfide and methane (Huang, C. (163) 645)

Thickness change

Lithium metal secondary cell; Lithium powder; Electrolyte consumption (Chung, J.H. (163) 191)

Thin film

LiMn₂O₄ coating; Soft X-ray absorption spectroscopy; ESD; Lithium rechargeable batteries (Yoon, W.-S. (163) 207)

Thionyl chloride

Battery; Fade; Lithium corrosion; Safety (Spotnitz, R.M. (163) 578)

Time-resolved X-ray diffraction

TiO,

Fuel cells; Polymer electrolyte; Oxygen reduction; Electrocatalyst; Pt (Gustavsson, M. (163) 670)

TiO.

NaAlH₄; VCl₃; HfCl₄; Hydrogen desorption/absorption (Suttisawat, Y. (163) 996)

TiO.

Nanocrystalline; Particles; Morphology; Ultrasonic (Kim, D.H. (163) 196)

Titania

Carbonization; Alcohol oxidation; Alkaline media (Hu, F. (163) 415)

Trace specie

Syngas; Coal; Solid oxide; Fuel cell (Trembly, J.P. (163) 985)

Transient model

Fuel cell; Polymer-electrolyte; Sweep simulations; Liquid water; Performance (Shah, A.A. (163) 792)

Tubular SOFCs

Current collection; Model; Micro SOFC (Suzuki, T. (163) 736)

Two-fluid model

Fuel cell; PEMFCs; Two-phase flow; GDL/channel interface; Liquid water removal (He, G. (163) 863)

Two-phase flow

Fuel cell; PEMFCs; Two-fluid model; GDL/channel interface; Liquid water removal (He, G. (163) 863)

Ultra-capacitor

Reversible fuel cell; Residential power; Dynamic model; Energy storage; Photovoltaic (Maclay, J.D. (163) 915)

Ultrasonic

Nanocrystalline; Particles; ${\rm TiO_2}$; Morphology (Kim, D.H. (163) 196) Urethane acrylate nonionomer

Sulfonated polyimide–silica nanocomposite; Membrane; Solvent effect; Crosslinker size (Lee, C.H. (163) 339)

VCl₃

NaAlH₄; TiO₂; HfCl₄; Hydrogen desorption/absorption (Suttisawat, Y. (163) 996)

Visualization

PEM fuel cell; Gas diffusion layer; Liquid water transport; Compression (Bazylak, A. (163) 783)

Volume changes

Silicon anode; Lithium-ion batteries; Cycle life (Kasavajjula, U. (163) 1002)

Water flooding

PEM fuel cells; Flow channel design; Neutron imaging technique (Li, X. (163) 932)

Water management

Proton exchange membrane fuel cell; Gas diffusion layer; Microporous layer; Carbon loading (Park, S. (163) 357)

Water-soluble binder

LiFePO₄; Li-ion; 60 °C (Guerfi, A. (163) 1046)

Wet-spinning

Fibre electrode; Polyaniline; Carbon nanotubes; All-polymer battery; Ionic liquid (Wang, C.Y. (163) 1104)

Wind

Stand-alone power systems; Energy storage (Lone, S.A. (163) 604)

XAS

Soft X-ray absorption spectroscopy; LiNiO₂; Lithium rechargeable batteries (Yoon, W.-S. (163) 234)

YSZ thin film

Solid oxide fuel cells (SOFCs); Spin smoothing (Wang, J. (163) 956)

Yttria-doped ceria

Electrolyte; Low-temperature combustion synthesis; Sintering; Conductivity (Xu, H. (163) 409)

ZEBRA battery

Intermediate temperature solid oxide fuel cell; Hybrid vehicle; System model (Brett, D.J.L. (163) 514)

Zinc

Fibres; Anode; Batteries; Fuel cells (Zhang, X.G. (163) 591)

Zirconium phosphate

Hybrid membrane; Salt of heteropolyacid; Methanol crossover; Proton conductivity (Helen, M. (163) 433)

Zirconium phosphate sulpfophenylenphosphonate

Sulfonated poly(ether ether ketone); Composite membrane; Solid proton conductor; Polymer electrolyte membrane fuel cell (Krishnan, P. (163) 2)

Zirconium(IV) oxide

Nafion; Composite membranes; DH-PEFCs (Saccà, A. (163) 47)

ZrO2-coated LiCoO2

In situ X-ray diffraction; Phase transitions; Lithium batteries (Chung, K.Y. (163) 185)